"أثر الخرائط الدلالية على تنمية مهارات البحث لدى طالبات قسم اللغة الإنجليزية وآدابها والترجمة الفورية ممن يتعلمن اللغة الإنجليزية كلغة أجنبية"

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"The Impact of Semantic Mapping on Developing Research Skills Among EFL Students in English Language, Literature, and Simultaneous Interpretation Department"

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Abstract:

This study examined the impact of semantic mapping on developing research skills among fourth-year female EFL students in the department of English language, literature, and simultaneous interpretation. To address the documented gap between academic instruction and professional research demands, the study implemented semantic mapping as a visual-cognitive strategy for enhancing information organization and critical thinking skills. A quasi-experimental pretest–posttest control group design was employed, preceded by a pilot case study to validate the instruments and instructional method. The four-month intervention consisted of weekly instructional sessions systematically integrating semantic mapping techniques into research skills training. A 34-item Research Skills Questionnaire and a performance evaluation rubric, both validated by subject-matter experts, were used to assess outcomes. Statistical analysis revealed significant improvements in the experimental group's ability to plan research, evaluate sources, and synthesize information. Qualitative feedback indicated enhanced learner autonomy and improved organizational clarity in research tasks. The findings confirm semantic mapping's effectiveness as a pedagogical tool for developing essential research competencies among EFL translation students. Results demonstrate the value of integrating visual-cognitive strategies into interpreter training curricula to better align academic preparation with professional requirements. The study offers practical implications for educators and curriculum

developers seeking to strengthen research-based instruction in translation and interpretation programs.

Keywords:

(Semantic Mapping Technique, Research Skills, EFL Students, Interpretation, Simultaneous)

Introduction

The ability to conduct effective research is fundamental to successful interpretation. Interpreters are not merely linguistic mediators; they must rapidly locate, evaluate, synthesize, and apply information across a wide range of subject areas (Gile, 2009). Research competence is therefore a core component of professional readiness in interpretation. As Martínez-Sierra (2010) notes, an interpreter is not only bilingual but also bicultural, requiring a deep understanding of sociocultural contexts—an understanding that depends on solid research capabilities.

Despite this, a persistent gap exists between the research skills fostered in academic interpreter training programs, and those required in real-world practice. While interpreter education often emphasizes language mastery, it tends to overlook critical skills such as information literacy, topic exploration, and strategic source evaluation. Sheng (2024) emphasizes that student interpreters frequently lack the knowledge competence essential for handling professional assignments. Similarly, Colina (2003) and Pym (2013) argue that many programs prioritize linguistic proficiency at the expense of broader cognitive and research capacities.

This discrepancy signals the urgent need for pedagogical strategies that directly cultivate research competence. Concept mapping has emerged as a promising educational approach for improving information organization and retention across disciplines. Within this broader category, semantic mapping—a technique that visually represents word meanings and conceptual relationships—offers particular potential for enhancing research-based learning. However, its use in interpreter education, especially for EFL learners, remains underexplored.

By focusing on semantic mapping as a cognitive-visual strategy, this study seeks to address the academic–professional research gap in interpreter training. It explores whether integrating semantic mapping techniques into classroom instruction can foster the development of practical, transferable research skills among EFL students preparing for careers in simultaneous interpretation.

Bridging the Research Skills Gap through Concept Mapping

Recent studies have explored innovative strategies to bridge the gap between academic training and the demands of professional interpreter practice, with concept mapping emerging as a particularly effective approach. Sheng (2024) examined the use of concept maps to enhance knowledge competence among undergraduate interpreter students, reporting that learners responded positively to the tool. Their favorable perceptions were attributed to its utility in supporting extra-linguistic knowledge acquisition, improving performance, and enhancing the overall clarity of complex topics. These findings underscore the potential of concept mapping to strengthen the cognitive scaffolding necessary for effective research and interpretation.

Beyond traditional concept maps, technological advancements have introduced additional methodologies for enhancing interpreter training. For instance, Unspoken Language Services (2024) investigated the role of online platforms and virtual reality (VR) in developing interpreter competencies. Online modules provided flexibility and asynchronous access to content, while VR offered immersive, real-time simulations of interpreting tasks. These tools enriched students' experiential learning and allowed for the contextual application of research skills in simulated environments.

In a related study, Xu and Ouyang (2023) analyzed the integration of meta-knowledge through a blended learning model that combined video lectures, quizzes, student presentations, discussions, and intensive practice. Their findings indicated that such multifaceted instruction promotes deeper cognitive engagement and cumulative skill acquisition. Collectively, these studies highlight the value of multimodal, learner-centered approaches—particularly those that incorporate visual structuring techniques like concept mapping—for improving research capabilities in interpreter education.

Semantic Mapping as a Pedagogical Strategy

Semantic mapping, a subset of concept mapping, is grounded in Novak's (1993) framework of knowledge representation and Ausubel's (1968) theory of meaningful learning. According to Ausubel, learning is most effective when new information is meaningfully connected to learners' existing cognitive structures. Novak expanded this view, emphasizing that integrating

new concepts into prior knowledge fosters deeper comprehension and long-term retention. Semantic mapping, in particular, enables students to visually organize and relate linguistic and thematic elements, making it especially valuable in cognitively demanding tasks such as interpretation and research.

While concept maps can represent various relational structures—hierarchical, temporal, and causal—semantic maps focus more explicitly on meaning-based relationships between ideas, words, or themes. In interpreter education, this technique can help learners categorize information, identify patterns, and recall domain-specific knowledge more efficiently. Sheng (2024), although addressing concept mapping broadly, found that students using visual mapping tools showed improved organization and retrieval of information, which are foundational for both research and interpretation tasks. Similarly, Xu and Ouyang (2023) reported that semantic mapping supported interpreters in systematically analyzing complex texts and identifying key themes under time pressure.

Moreover, advancements in educational technology have expanded the application of mapping strategies. Unspoken Language Services (2024) demonstrated how virtual environments and AI-assisted semantic mapping tools can provide immersive, interactive experiences for interpreter trainees. These tools allow for real-time feedback and foster dynamic knowledge construction, complementing traditional pedagogical techniques.

The Need for Structured Pedagogical Approaches

Despite these advances, interpreter education still often relies on unstructured, trial-and-error methods that do not systematically develop essential skills such as research competence. The field lacks consensus on the core cognitive, linguistic, and information-processing abilities required for professional interpretation. This study addresses this gap by operationalizing research skills within a structured instructional framework and examining the impact of semantic mapping as a targeted pedagogical tool. By adopting evidence-based strategies such as semantic mapping, interpreter training programs can more effectively scaffold learners' development, ensuring they are prepared for the complex realities of professional interpreting.

Statement of the Problem

Findings from the pilot study revealed that fourth-year EFL interpretation students, particularly those engaged in oral translation from English to Arabic, exhibited a marked deficiency in research-related competencies. These deficiencies were identified through performance-based assessments and observational checklists that evaluated students' abilities to locate, analyze, and synthesize relevant information during interpreting exercises. The results indicated that many students lacked structured research strategies, struggled to retrieve domain-specific knowledge efficiently, and demonstrated poor organization when preparing for interpretation tasks.

This research gap significantly undermines interpreting performance. Effective interpretation in professional contexts demands rapid access to accurate, thematically relevant information across specialized fields. Yet, interpreter education programs often prioritize linguistic fluency while underemphasizing essential research skills. As a result, students are ill-equipped to meet the demands of real-world interpreting assignments.

To address this pedagogical gap, the present study investigates the use of semantic mapping as an instructional strategy for developing research skills in EFL interpretation students. Specifically, it examines whether this visual-cognitive technique can improve learners' ability to systematically gather, process, and apply information required for interpretation.

Refined Section: *Research Questions*

Research Questions

This study is guided by the following research questions:

Main Research Question:

- What is the impact of semantic mapping on the development of research skills in fourth-year EFL interpretation students translating from English to Arabic?

Sub-Questions:

- **RQ1**: To what extent does semantic mapping enhance EFL interpretation students' ability to locate, evaluate, and synthesize information relevant to interpreting tasks?

- **RQ2**: How does the implementation of semantic mapping contribute to achieving program learning outcomes related to research competence in interpretation?

Method

Research Design

This study adopts a quasi-experimental pretest–posttest control group design to assess the effect of semantic mapping on the research skills of fourth-year EFL interpretation students. This design is appropriate for educational settings where random assignment is impractical, allowing for a meaningful comparison between a control group (receiving traditional instruction) and an experimental group (receiving instruction with semantic mapping).

To strengthen the internal validity of the findings, a difference-in-differences (DiD) approach was applied. This method compares the change in outcomes between the two groups before and after the intervention, focusing not just on final scores, but on the difference in each group's progress over time (Cook & Campbell, 1979). This "change in the change" approach helps isolate the effect of the semantic mapping intervention by controlling for time-based confounding variables.

The study design, instruments, and procedures were refined based on insights from a prior pilot case study, which helped ensure alignment with the students' academic context, and improved the reliability of the research tools.

Participants

The study involved 35 fourth-year female students from the Interpretation Department of English at the Faculty of Humanities, Cairo University, representing approximately 23% of the full cohort. The decision to include a female-only sample was a deliberate delimitation aligned with the demographic composition of the department, where female students constitute the majority. This choice also helped control for gender-based variability in interpreting, and research performance.

Participants were assigned to two intact class groups based on their existing academic sections. One class served as the experimental group, receiving semantic mapping instruction,

while the other functioned as the control group, receiving traditional instruction. Although random assignment was not feasible, group equivalence was verified through pre-test comparisons to establish baseline similarity, consistent with the study's quasi-experimental design.

Instruments

Three main instruments were used to collect quantitative, and qualitative data:

1. **Research Skills Questionnaire**
    - A 34-item instrument used at four points (pre-test, mid-test, post-test, and delayed post-test).
    - Designed to assess students' ability to locate, evaluate, organize, and synthesize research information.
    - Included Explicit Textual Questions (ETQs) and Implicit Textual Questions (ITQs), combining closed-ended (multiple-choice) and open-ended items.
    - The questionnaire was piloted with a similar cohort prior to the main study. Internal consistency was assessed using Cronbach's Alpha ($\alpha = 0.87$), indicating high reliability.
2. **Performance Evaluation Rubric, and Checklist**
    - Used to assess interpreting performance on research-based tasks.
    - The rubric evaluated accuracy, information organization, use of terminology, and strategic reformulation.
    - Expert validation was conducted by three specialists in interpretation, and language education.
    - The researcher, and two trained colleagues served as independent raters. Inter-rater reliability was calculated using Cohen's Kappa ($\kappa = 0.81$), indicating strong agreement and minimizing subjective bias.
3. **Student Perception Questionnaire**
    - Administered at the end of the study to capture students' self-assessment, and

perceptions.

- Focused on the perceived difficulty of interpreting tasks, and the comparative usefulness of semantic mapping versus traditional instruction.
- Provided insight into learner engagement, satisfaction, and perceived skill development.

Materials

The following materials were used:

- **MindManager** software for designing and displaying semantic maps.
- **Structured lesson plans** aligned with learning objectives, and weekly outcomes.
- **Interpreting texts** selected for their relevance, cultural authenticity, and suitability to students' level.
- **Handouts, and worksheets** supporting in-class semantic mapping, and follow-up research tasks.

Procedure

The study was conducted over a 16-week semester, and followed six phases:

1. **Pre-Testing (Week 1)**
   - Both groups completed the Research Skills Questionnaire to establish baseline performance.
2. **Intervention Phase (Weeks 2–13)**
   - *Experimental Group:* Received 12 one-hour instructional sessions integrating semantic mapping into research instruction.
   - *Control Group:* Received 12 one-hour sessions using traditional instruction without mapping tools.
3. **Mid-Testing (Week 7)**
   - Both groups completed the mid-test to track formative progress.

4. **Post-Testing (Week 14)**
    - Both groups completed the post-test to assess immediate gains.
5. **Delayed Post-Test (Week 16)**
    - Both groups completed the final test to evaluate retention and longer-term impact.
6. **Student Perception Questionnaire (Week 16)**
    - Collected feedback on students' perceptions of the instructional method, and their perceived gains in research and interpreting skills.

Data Analysis

Quantitative Analysis

Data from the Research Skills Questionnaire were analyzed using quantitative statistical methods. Descriptive statistics (means, and standard deviations) summarized participants' performance across four measurement points: pre-test, mid-test, post-test, and delayed post-test.

To examine the study's main hypothesis (H1), a repeated measures ANOVA was conducted. This test allowed for assessing whether statistically significant changes occurred in students' research skill scores over time. When the ANOVA yielded significant main effects, post-hoc pairwise comparisons using paired t-tests with Bonferroni correction were performed to identify the specific phases where significant differences occurred.

Qualitative Analysis

Responses to the Student Perception Questionnaire were analyzed using thematic analysis. Codes were developed inductively, and then grouped into thematic categories to identify common perceptions about the utility of semantic mapping, perceived skill development, instructional clarity, and challenges. This analysis offered nuanced insights into students' experiences with the intervention, and its impact on their engagement, and self-efficacy.

Contextualizing Research Skills in Interpreter Training

Interpreter training literature highlights the necessity of integrating practical research

strategies with theoretical learning (European Commission, 2013, pp. 12–13). However, a persistent challenge lies in defining, and operationalizing the specific sub-skills that constitute effective research competence in interpretation (Moser-Mercer et al., 1997; Kutz, 1990). This study adopts a functional definition of research skills by drawing on the information literacy, and media literacy frameworks outlined in the World Academy Chicago's MYP Personal Project (2019–2020).

Information Literacy Sub-Skills

- Deliberate selection of diverse and appropriate sources
- Critical evaluation using structured frameworks (e.g., CRAAP test)
- Accurate data collection, recording, and verification
- Synthesis, and integration of multiple information sources
- Ethical use of information, proper citation, and referencing

Media Literacy Sub-Skills

- Evaluation, and synthesis of digital, print, and audiovisual media
- Recognition of media framing, bias, and representation
- Drawing comparative insights across multiple media formats
- Application of critical literacy in interpreting visual and textual content

These sub-skills were embedded into instructional design, and assessment rubrics, forming the basis for both the cognitive, and performance-based evaluation of student progress.

Experimental Group Intervention Details

The experimental group participated in 12 weekly sessions, each one hour in duration, guided by an instructional framework integrating semantic mapping into research, and interpreting tasks. Key components included:

- **Direct Instruction:** Introduction to semantic map types, techniques for identifying, and linking concepts, and applications to real-world interpretation scenarios.

- **Collaborative Activities:** Group-based completion of "fill-in-the-blank" semantic maps to reinforce thematic understanding and structural logic.
- **Individual Mapping Practice:** Independent assignments with feedback loops, where students refined maps based on interpreting texts, and prior instruction.
- **Warm-Up Tasks:** Brainstorming and review exercises to activate background knowledge and promote schema integration.
- **Homework Assignments:** Students created semantic maps based on interpreting cases or structured research prompts, with rubric-aligned evaluation.

Evaluation Details

- **Student Performance Evaluation:** Research-based interpreting tasks were assessed using a performance rubric focusing on organization, terminology accuracy, and strategic information management.
- **Self-Assessment Questionnaire:** Developed, and validated by expert judges in language pedagogy, and interpretation.
- **Observer Ratings:** Three independent raters (the researcher, and two trained colleagues) used a double-blind scoring process. Inter-rater reliability was high (Cohen's Kappa $\kappa = 0.81$), indicating consistency, and minimizing subjectivity.

Evaluating Source Credibility: The CRAAP Test

Students were trained to evaluate sources using the CRAAP test, which guided critical assessment through five criteria:

- **Currency:** Timeliness, and relevance of publication
- **Relevance:** Appropriateness for research goals, and audience
- **Authority:** Expertise of the author or institution
- **Accuracy:** Evidence-based content verified across sources
- **Purpose:** Awareness of authorial bias, and intent

The CRAAP test was applied iteratively during student assignments, and incorporated into self-assessment protocols. While some sources lacked recency, students were encouraged to triangulate older materials with updated content to maintain contextual validity.

Study Delimitations

- **Participants:** Limited to 35 fourth-year female students, representing 23% of the cohort, at Al Azhar University's Interpretation Department, Cairo.
- **Duration:** Four-month study with a two-week follow-up for retention assessment
- **Materials:** Professionally relevant interpreting texts, and thematic content
- **Location:** Classroom-based with occasional supplementary online sessions via WhatsApp, and Telegram
- **Intervention Timeframe:** Twelve one-hour weekly sessions, plus assessments

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Variables

- **Independent Variable:** Use of semantic mapping as a pedagogical intervention
- **Dependent Variable:** Students' research skills, as measured by questionnaire scores, and interpreting task evaluations.

Hypothesis

- **H1:** There will be a statistically significant improvement in research skills among students who receive semantic mapping instruction, compared to those receiving traditional instruction, as measured by pre- and post-intervention scores.

Aim of the Study

This study aimed to investigate the effectiveness of semantic mapping as an instructional strategy for improving research skills in interpreting courses among EFL students. It examined

whether visual-cognitive tools could enhance learners' ability to collect, organize, and apply information relevant to professional interpretation.

Significance of the Study

This study holds both pedagogical, and practical significance for various stakeholders involved in interpreter education. For EFL students, the findings offer a structured approach to enhancing interpreting competence through the systematic development of research skills, which are often underemphasized in traditional curricula. Improved research capacity equips students to engage with interpreting tasks more confidently, with enhanced organization and contextual awareness.

EFL instructors may benefit from incorporating semantic mapping as an instructional strategy that aligns with contemporary cognitive learning theories. By integrating visual-spatial tools into classroom practice, instructors can promote deeper student engagement and support the development of skills needed to organize and synthesize complex information effectively.

For curriculum designers, and academic planners, this study provides empirical support for integrating research skills into interpreter training curricula. It underscores the importance of extending beyond language proficiency to include the strategic cognitive competencies essential for real-world interpretation, thereby contributing to more comprehensive and professionally relevant educational programs.

Study Definitions

- **Semantic Mapping Technique: Semantic Mapping Technique**: A form of concept mapping, semantic mapping is a visual instructional strategy used to illustrate relationships among words, concepts, or themes. In this study, it refers to the structured use of visual-verbal tools—such as maps with labeled nodes and connectors—to enhance the organization, retention, and application of information in interpretation tasks. The technique is employed in conjunction with guided reflection to promote metacognitive awareness and deepen content understanding (Plotnick, 1997).

- **Interpretation:** Interpretation refers to the real-time oral transmission of spoken messages from one language to another. This study specifically focuses on *consecutive interpretation* from English into Arabic, a mode in which interpreters listen to a segment of speech, process and retain the information, and then deliver the message in the target language after a brief pause. This process requires the integration of listening, memory, note-taking, and reformulation skills, often under time constraints and with minimal delay. It is distinct for *simultaneous interpretation*, in which the message is rendered in real time without pauses.

Research Skills: In the context of this study, research skills refer to the cognitive and practical competencies essential for the effective preparation and execution of interpretation tasks. These skills encompass the ability to locate and assess credible sources, organize thematic information, critically evaluate content, synthesize data from multiple inputs, and ethically document references. Such competencies are integral to professional interpreter training, as they support informed decision-making, contextual accuracy, and adaptability in multilingual and multicultural settings. Moreover, these skills align with higher-order cognitive domains in Bloom's Taxonomy, including analysis, evaluation, and creation.

The implementation of the concept mapping technique:

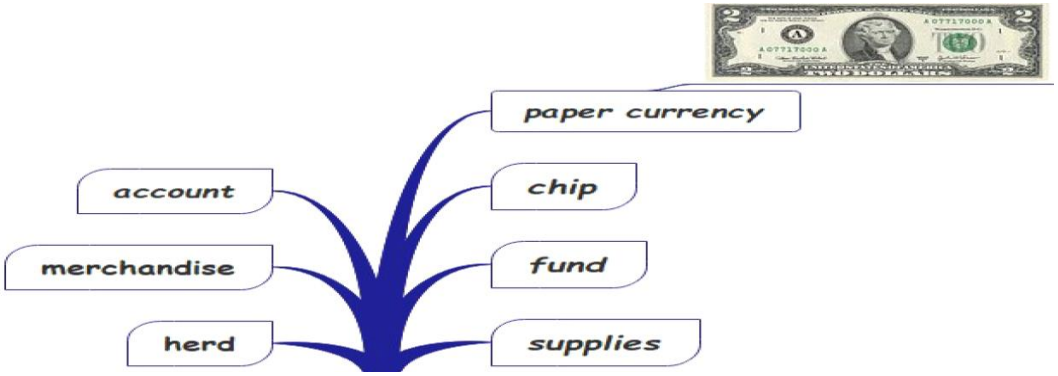

Figure1

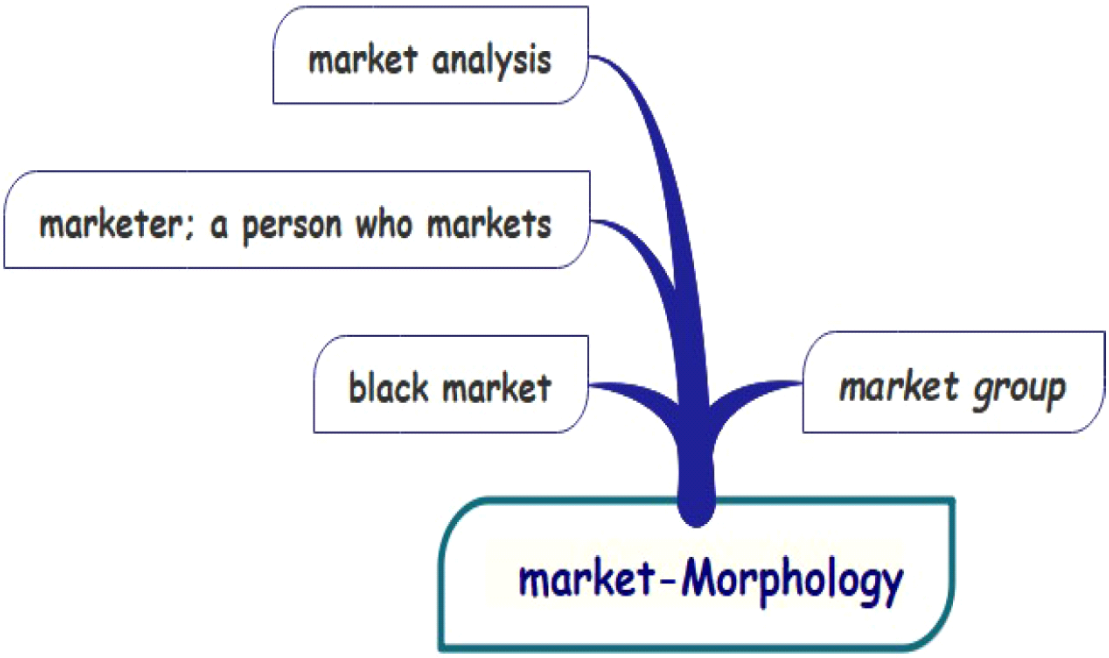
market analysis
marketer; a person who markets
black market
market group
market-Morphology

Figure 2

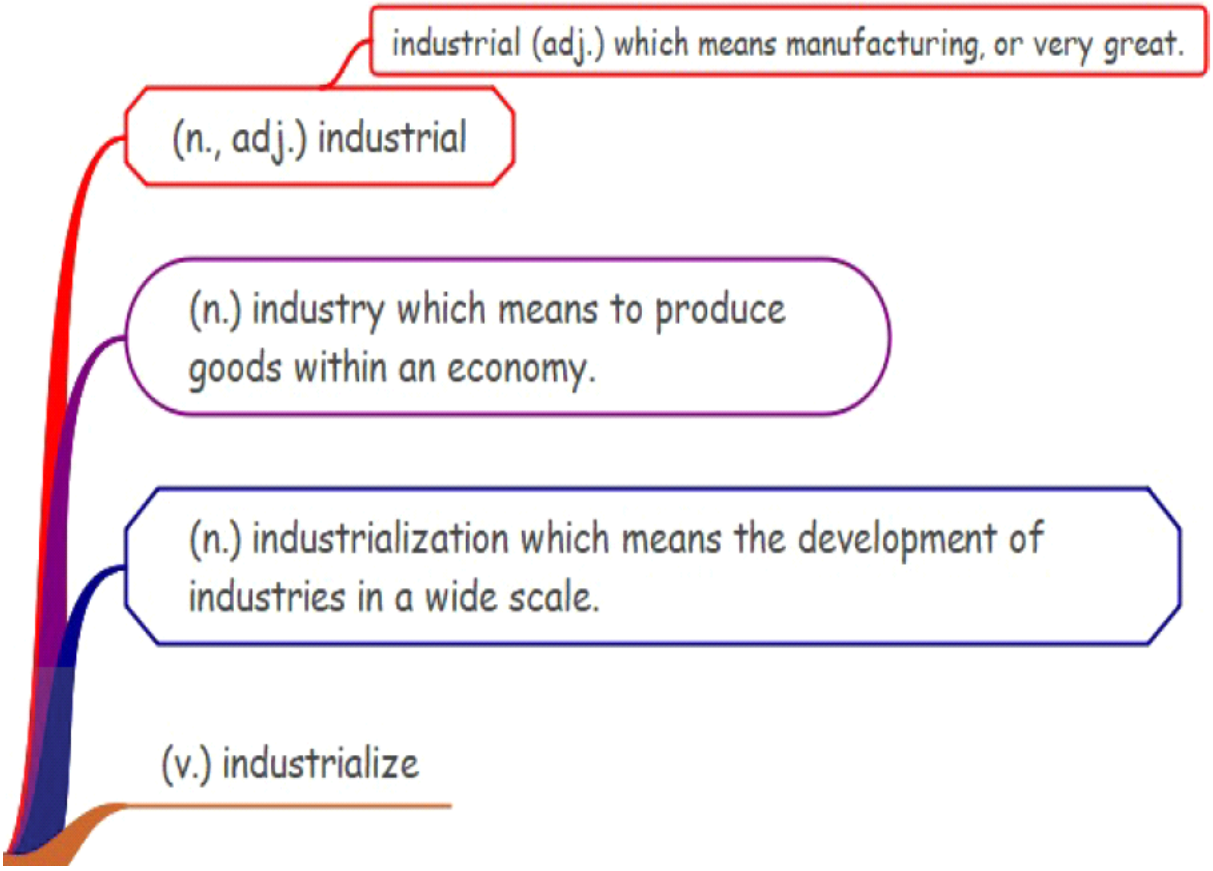
industrial (adj.) which means manufacturing, or very great.
(n., adj.) industrial
(n.) industry which means to produce goods within an economy.
(n.) industrialization which means the development of industries in a wide scale.
(v.) industrialize

Figure 3

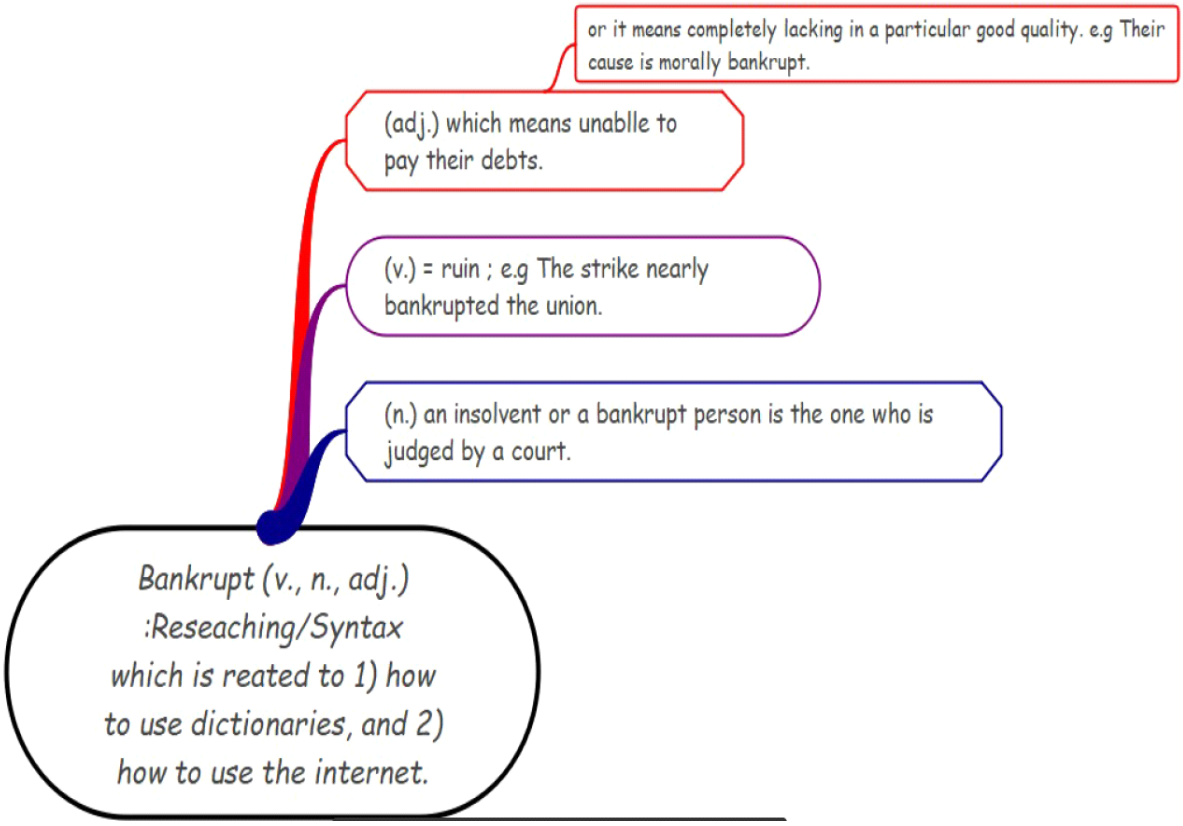
Bankrupt (v., n., adj.) :Reseaching/Syntax which is reated to 1) how to use dictionaries, and 2) how to use the internet.
(n.) an insolvent or a bankrupt person is the one who is judged by a court.
(v.) = ruin ; e.g The strike nearly bankrupted the union.
(adj.) which means unablle to pay their debts.
or it means completely lacking in a particular good quality. e.g Their cause is morally bankrupt.

Figure 4

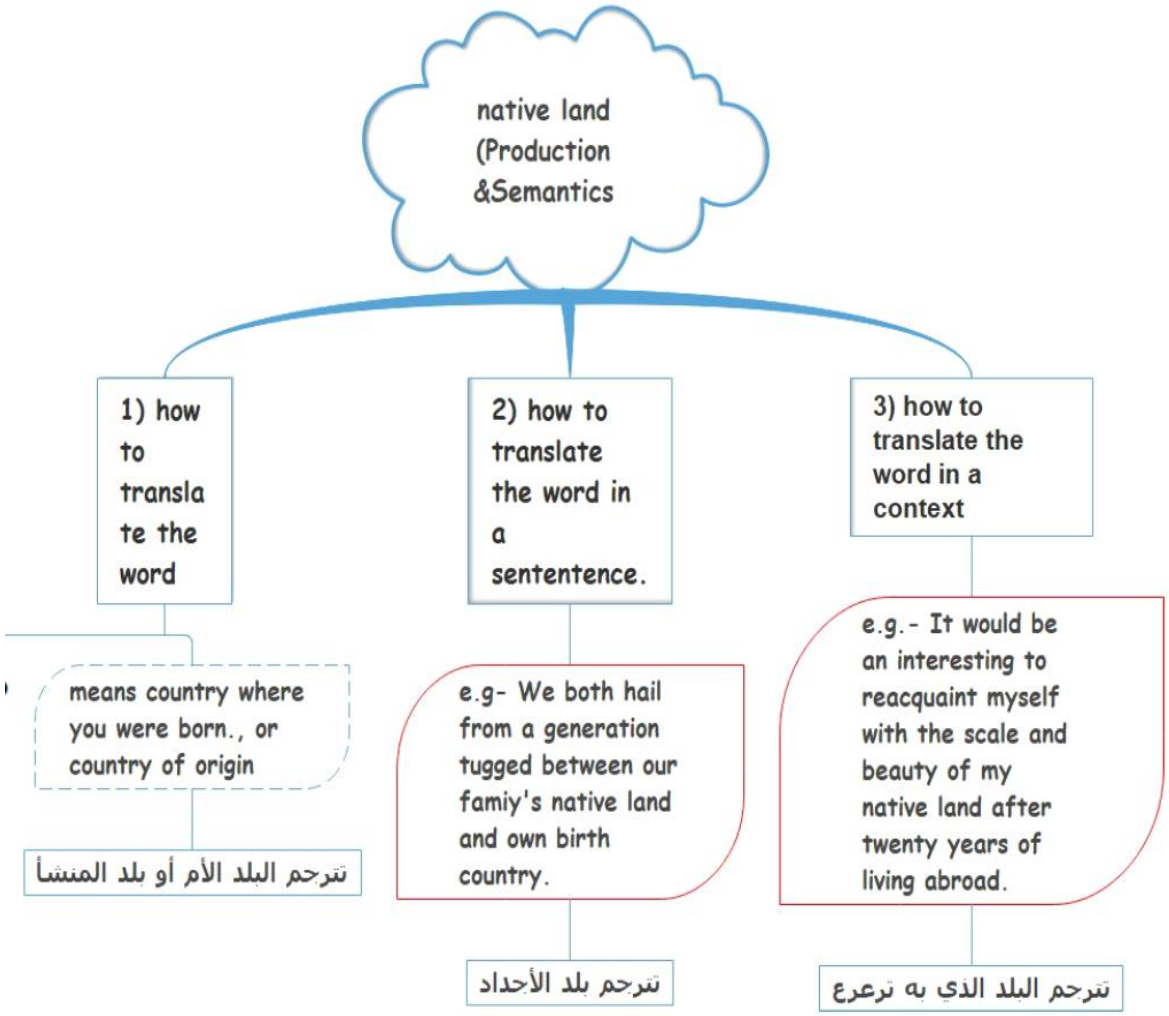
native land (Production &Semantics
1) how to transla te the word
2) how to translate the word in a sententence.
3) how to translate the word in a context
means country where you were born., or country of origin
e.g- We both hail from a generation tugged between our famiy's native land and own birth country.
e.g.- It would be an interesting to reacquaint myself with the scale and beauty of my native land after twenty years of living abroad.
تترجم البلد الأم أو بلد المنشأ
تترجم بلد الأجداد
تترجم البلد الذي به ترعرع

Figure 5

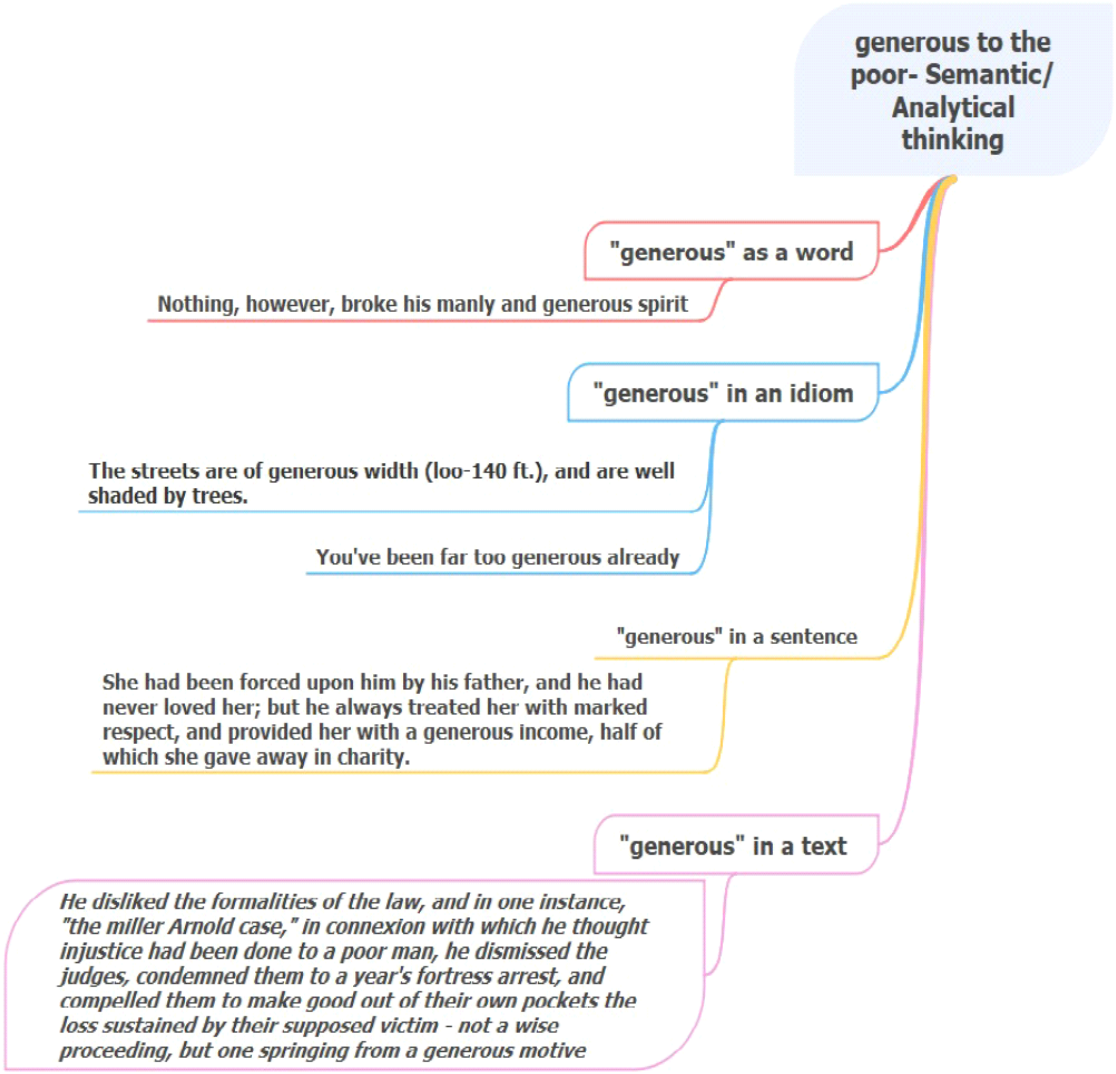
generous to the poor- Semantic/ Analytical thinking
"generous" as a word
Nothing, however, broke his manly and generous spirit
"generous" in an idiom
The streets are of generous width (loo-140 ft.), and are well shaded by trees.
You've been far too generous already
"generous" in a sentence
She had been forced upon him by his father, and he had never loved her; but he always treated her with marked respect, and provided her with a generous income, half of which she gave away in charity.
"generous" in a text
He disliked the formalities of the law, and in one instance, "the miller Arnold case," in connexion with which he thought injustice had been done to a poor man, he dismissed the judges, condemned them to a year's fortress arrest, and compelled them to make good out of their own pockets the loss sustained by their supposed victim - not a wise proceeding, but one springing from a generous motive

Figure 6

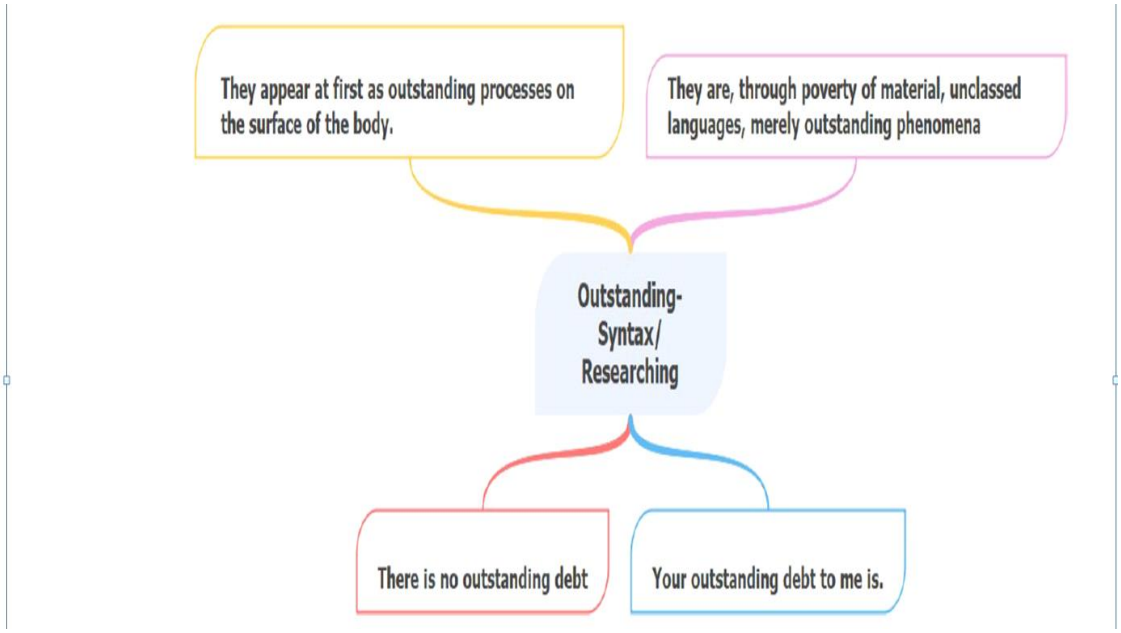

Figure 7

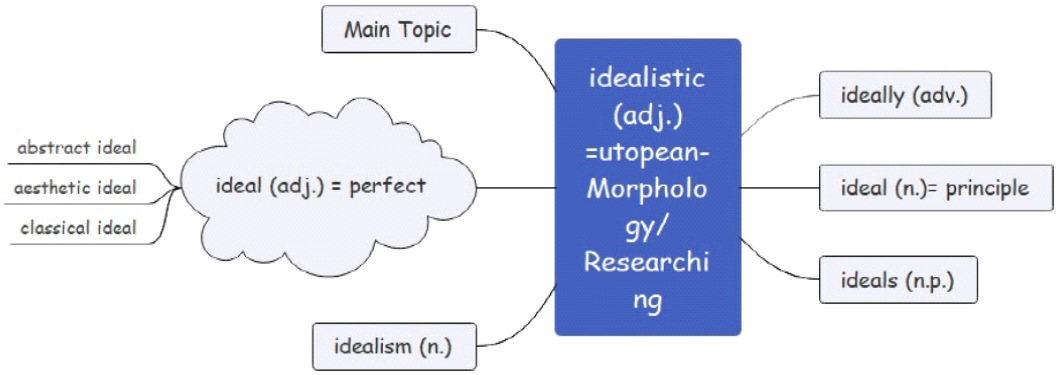

Figure 8

Conclusions

This study concludes that integrating semantic mapping into EFL interpreter training significantly enhances students' research skills by offering a structured, engaging, and cognitively supportive instructional approach. The findings demonstrate that when learners are

actively involved in visualizing and organizing information through semantic mapping, they are better equipped to locate, evaluate, and synthesize information essential for interpreting tasks.

To maximize the pedagogical effectiveness of semantic mapping, instructors are encouraged to embed the technique directly into interpretation curricula. Facilitating active student engagement in the creation and analysis of maps deepens conceptual understanding and promotes critical thinking. Utilizing diverse mapping formats—including mind maps, hierarchical maps, and flowcharts—can accommodate various learning styles and task complexities. Peer collaboration in map-building fosters discussion, mutual learning, and social construction of knowledge. Additionally, providing ongoing, constructive feedback on students' maps is essential to refine their application of research sub-skills and support continuous improvement.

Implications for Curriculum Design

The results suggest several important implications for curriculum developers and educational policymakers. First, research skills should be explicitly integrated into interpreter training programs as core competencies, rather than treated as ancillary skills. Second, curriculum frameworks should formally adopt semantic mapping as a recommended pedagogical tool for teaching research-driven interpretation preparation. Finally, instructional materials—including training guides, editable mapping templates, and sample lesson plans—should be developed and disseminated to support teachers in implementing this strategy effectively and sustainably.

Adaptability of Semantic Mapping

Semantic mapping is a flexible instructional method adaptable across varying contexts, course levels, and interpreting modules. Its visual and conceptual versatility enables it to support students in numerous language and content domains. As highlighted by Novak and Cañas (2020), the adaptability of semantic mapping stems from its cognitive scaffolding properties, making it a universally applicable learning tool. Whether used in beginner-level interpreting courses or advanced professional workshops, it can be tailored to meet learners' evolving needs.

Addressing Non-Significant Results

In instances where semantic mapping does not yield statistically significant improvements, several moderating factors should be considered. These include sample size limitations, insufficient intervention duration, student unfamiliarity with visual learning tools, or mismatches between mapping tasks and cognitive load (Sweller, 2019). Evaluating and adjusting these variables can help optimize implementation and uncover more nuanced instructional effects.

Recommendations for Future Research

To build on the findings of this study, future research should consider several avenues:

- **Broader Samples:** Studies involving larger and more diverse student populations can enhance the generalizability of results.
- **Longitudinal Designs:** Research tracking the long-term impact of semantic mapping on interpreting performance in professional contexts would provide deeper insight into its sustained value.
- **Mixed Method Approaches:** Combining semantic mapping with other pedagogical strategies, such as note-taking training or multimedia instruction, may reveal synergistic effects.
- **Application to Other Skills:** Further studies could examine the role of semantic mapping in developing related competencies such as terminology management, public speaking, and memory recall.
- **Comparative Format Studies:** Experimental designs comparing different map types (e.g., concept maps vs. mind maps) for specific research-related or interpreting tasks can help refine best practices (Fiorella & Mayer, 2021).

Through these lines of inquiry, researchers can continue to refine, and extend the role of semantic mapping in interpreter education, ensuring its continued relevance, and alignment with learners' evolving needs

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